The Long Slow Road to Technical Standards

by Raymond Wyman

Standards mean many things to many people. We have some special needs for technical standards in educational technology, or audiovisual education as we once called our field of work.

Our needs and solutions can be illustrated with a little history of the wax candle industry. When one person ***made*** candles, ***made*** candle holders, and ***used*** the combination for his own safe, dependable and efficient lighting, there was no need for any standards. But when one person made candles, another made holders, and a third needed to choose, purchase and use the combination at a remote location, then major problems of fit, safety, and light output versus cost resulted. And each vendor made claims for a superior and more useful product in terms that were often clouded in meaning.

Through many years, standards for candles were gradually and cooperatively developed so that a standard diameter candle would fit a standard size holder in a safe, easy, reliable and inexpensive way. And the grease spot photometer was invented and perfected in order to compare the brightness or light output of any two candles in an objective fashion. A standard or reference candle was also cooperatively developed with an exact description of materials, sizes, rate of burning, etc. to produce exactly one candle power, by definition, for rating any candle on the market. A person could now buy light instead of candles.

It would seem that the obvious success of this humble beginning in technical standards work many years ago would have assured a complete and appropriate set of standards for all of our needs today. Such is not the case.

Technical sandards for a variety of acoustic, optical, magnetic, electronic and mechanical machines and materials to use with them are needed for twelve purposes:

1. Fit or compatibility. The film, tape or slide in its reel, cassette, cartridge or mount must interface or mate with the machine that is needed. An impossible variety of formats now exist to confuse everyone and drastically reduce media use.

2. System interconnection. Much media use involves connecting one device to another. The variety of connectors, impendances and voltages now require much more technical sophistication and adaptors than should be needed.

3. Function or performance. The device must produce a visual and/or acoustic output of a level and quality that can be specified and compared with other devices for a specific setting and purpose.

4. Safety. The device must not be a hazard to operator, audience or materials under any expected conditions of use.

5. Vocabulary. The terms used to describe the device must have the same meanings for everyone.

6. Symbols and labels. The limited space on containers, controls and rating plates make symbols and abbreviations necessary. There is no space for several languages.

7. Rating plates. With many different electrical supplies and possible interconnections, a quick and clear indication of machine requirements is essential.

8. Life testing. How long a machine or a part such as a projection lamp will last must be measured under specific test conditions.

9. Efficiency. How well the device makes use of power and how much it costs to purchase and for replacement parts such as lamps for a given output should be known.

10. Control layout. Ergonomics has entered our vocabularies and area of concern. Moving from one model to another should not result in confusion or errors.

11. Reference standards. Similar to the standard candle, we need tapes, slides, films or even machines of known characteristics or quality for comparison purposes.

12. Acceptability. There are usually minimum standards of performances that will be considered acceptable for a specific setting or use. They make use of standard performance tests. They often also include standards for safety.

In the audiovisual or educational technology field we have had some outstanding success stories with technical standards:

1. 16mm motion pictures. For fifty years we have had standard images and sound on all 16mm films and standard reels so that any film could be used on any projector in the world without any difficulty. A succession of manual, automatic and slot loading machines were adapted to the standard materials without difficulty.

2. Audio cassettes. A tape container for audio dictation was accepted by many machine makers and a long succession of better and better audio devices were perfected without making any of them obsolete. Improvements to a product rather than substituting a new product have usually proved most helpful to us.

3. 50 x 50 mm slides. The slides that we call 2 x 2 have had standard outside dimensions for fifty years so that they can be used on any machine throughout the world. However, many different trays or holders have been developed so that it may be necessary to change slides. Apparently, the Kodak Carousel tray is rapidly becoming an international standard container for holding and projecting these slides.

4. Slides plus sound plus automatic advance. After many non-compatible systems, a single 50 Hertz system for filmstrips and a single 1000 Hertz system for slides along with the audio cassette have been standardized and accepted throughout the world.

5. Measuring and reporting optical characteristics. The image brightness and fidelity of a variety of projectors can be objectively measured, reported and compared. Screen characteristics can also be objectively measured.

6. Measuring and reporting electrical characteristics. Electrical requirements can be accurately reported on the rating plate. Amplifier output level and fidelity can be objectively measured, reported and compared.

7. Projection lamp code and life testing. The three letter lamp code guarantees interchangeability of lamps among all manufacturers, and labels on projectors even permit replacing a missing lamp. Lamp life now has a definite technical meaning.

We also have some major failures and frustrations in technical standards for educational technology:

1. Eight millimeter films. Some years ago we had a major revolution in motion pictures waiting for an incident called standardization. Because we could not standardize on a sound track and film container, many single purpose projectors were developed and no one ever was able to gain much popularity. Due to lack of standardization, 8mm is practically dead.

2. Connectors. Every media person has a strange collection of adaptors and patch cords that only serve to compensate for our lack of effort in the standardization field. Some progress is being made in America and in Europe, but in different directions.

3. Television tapes. Most attempts to use TV tapes in a distant place without actually taking the appropriate machine seem to result in failure. The various widths, formats, cassettes and speeds within formats have caused enormous confusion. Broadcasters seem to be standardizing on SMPTE Type C. No single non-broadcast standard seems to be in sight. Three videodisc formats have likewise inhibited our interest in this potentially tremendous medium.

4. One standard for projector safety. Projector makers hestitate to change models in any way because it means that nearly every country must destroy a sample to prove that it is safe for use in that country. There may also be different standards for use in homes, schools, industry and the military. The International Electrotechnical Commission has set up a special committee #61G to attempt to make one safety standard for all projectors and all uses.

5. Measuring and reporting sound output. At least half of the value of audiovisual education comes from the sound produced by loudspeakers, and most of the interference comes from the noise and the machines generate. We have so far been unable to devise and agree on a method for measuring and reporting either one.

6. Multiplicity of projection lamps. We have no control over the rapid development of many expensive lamps with marginal advantages. We need major advances such as tungsten-halogen and proximity reflectors, but much smaller numbers of standard lamps would be very helpful.

7. Standard secondary voltage. There is no hope of converting North America to 230 volts or of converting Europe to 120 volts. But all audiovisual equipment needs a much lower value than either main voltage for effective and safe lamps and amplifiers. A single secondary standard such as twenty-four volts would seem to have tremendous advantages.

8. Computer interface. Our latest problems come from lack of standards for computer interface so that one computer can at least be connected to another. Language standardization is another major and emerging problem.

There are some lessons to be learned from our long experience with standards for audiovisual technology:

1. It takes a long time to make good standards.

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Raymond Wyman is a professor at the University of Massachusetts, Amkerst, Massachusetts.

Towards a Woolly Objective

by G. Robert McNutt
University of New Brunswick

Consider the lion and the lamb.

Let us postulate a lying down together of the two conceptual unities.

Being biologically unsuited to the task, the lamb is not in the least interested in eating the lion. Thus, we must assume, that the lion to the lamb can be considered as a windbreak, a source of heat or a protection against things that eat lambs and are wary of lions.

On the other hand, the lamb to the lion is not a protection, only a minimal heat source and not much of a windbreak at best. Simply put, the lion can be considered as being programmed to eat the lamb, whereas the reverse is clearly not true.

Let us assume that our goal, be it ethical, moral or vegetarian, is to insure the survival of the lamb. In this case, technology offers a solution. It is only necessary to adapt existing military weaponry so that the lamb can interact operationally with the situation and enact its own survival by wasting the lion on the spot. Thus we have a solution achieved through modification of existing resources and implementation of a training programme.

Conversely, let us assume that our goal is to insure the survival of the lion. In this case we need only avert our sensitive eyes. The lion can optimize its own solution by engaging in goal seeking activities comprising both bits and bites. Here we have a solution achieved through conforming to the "what is" design, thus maintaining the status quo.

What, however, can we do if our goal is to insure the survival of both lamb and lion?

Let us create a life size model. A two tier construct would seem both logical and spatially economic. The lighter lamb can be placed on top of a platform which has bars set too close together for the lion to enter. The lamb can lie down in the top storey and the lion can lie underneath. Both lion and lamb are thus lying down together in safety. Here we have a solution achieved by individualizing two tracks to a common goal.

There is, at this point, a bug in the program.

As soon as the inputs of hunger and thirst force the lamb to squeeze out of its survival matrix, the lion will pounce.

The moral, gentle reader, is plain.
It matters not how well you plan.
Nor how oft you test design.
The soul of good technology
Is the role of the bottom line.

New Internationalists
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newspapers: The Association of Universities and Colleges of Canada (AUCC) puts out a monthly newspaper which contains advertisements from foreign universities. Departmental bulletin boards in universities and colleges also sometime contain letters from overseas' faculties seeking new staff or staff exchanges.

Another good source is foreign newspapers, particularly British ones. Recommended are the Observer, the Guardian and especially the Times Higher Educational Supplement. Most Canadian Universities and larger Colleges house these newspapers and others in their periodical section.

The above are only a few suggestions. One final idea is to seek out somebody who has been overseas in order to "tap his brain". Such individuals often have useful information or even personal contacts abroad.

SUMMARY

Professionals in the field of educational communications and technology have the chance to contribute to development in many overseas and third world countries. The opportunities are many and range from academic posts to grass-roots research and development of local curriuclum and materials. For the right people, these are tremendous possibilities for personal and professional growth.

[1].All quotations are taken from advertisements in the weekly **Times Higher Educational Supplement;** from the years 1979 and 1981. □

Media News
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10th Annual Grierson Documentary Seminar. Recent documentaries on any subject as well as docudramas will be considered.

The Seminar is named after John Grierson, the founder of the British documentary and the National Film Board of Canada. His interest in the medium's potential for social change has shaped the direction of much Canadian and world documentary production.

The Seminar provides film — and video-makers with a forum to debate Grierson's influence as directors are invtied to present their work for screening and to engage in critical discussions about contemporary and historical documentary practice with their peers, media educators, writers and programmers. (Since the effect of these discussions is cumulative, all guests are required to attend the Seminar for the entire week.)

For further information contact:
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Media Workshop
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gram in Action—A Longterm Study. Unpublished Manuscript, 1983.
[2]Baron, L. **Research and Development of a Cable Distribution System to Involve Children in the Learning of Concepts of Communication and Accompanying Skills.** Montreal: Concordia University, Education Department, June, 1982. □

LETTER TO THE EDITOR

Dear Denis:

Canadian Data has just applied for a corporate membership of A.M.T.E.C. following our most successful representation in London, Ontario. We were very impressed with the response to our product "M.R.C.S. — Media Reservation and Catalogue System", that we would like to insert a regular monthly advertisement in "CJEC".

Sincerely yours,
Trevor Barnett
Marketing Manager

Technical Standards
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2. Standards must be made by consensus between manufacturers and consumers.
3. Standards must be international.
4. Consumers must somehow be supported for standards work. Participation is expensive.
5. Developing countries are in paticular need of standards, and they do not yet participate.
6. The separate international standards organizations known as IEC and ISO must be combined.
7. CSA and UL should combine and/or coordinate their work to avoid duplication and differences.
8. Consumers will not get any more standards than they demand and are willing to work for.
9. Standards must not hinder the development of new and better products.

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